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OBSERVATIONS ON STENOMA MISTRELLA BUSCK (STENOMIDAE, LEPIDOPTERA)*

H. D. Oliver Miller, Kansas State College[1]

Thirteen larvae of **Stenoma mistrella** Busck were collected near Manhattan on brome grass the latter part of May, 1939. One larva was also collected from Kentucky blue grass at Manhattan, the latter part of July, 1939. These brief observations are recorded because the species has not been studied to any extent.

Busck (1906) made the original description of **Stenoma mistrella** from five specimens collected at St. Louis, Mo. Forbes (1933) listed the larva as being found on timothy. He also indicated that the moth was present in July and September and ranged from western Pennsylvania to northern Illinois and Missouri.

The larvae collected by the writer were pinkish-brown with a dark longitudinal stripe on the dorso-median surface (fig.5). They had chestnut brown head capsules (fig. 2) and black cervical shields. The setal pattern (fig. 1) resembled that of **Nomophila noctuella** D. & S.

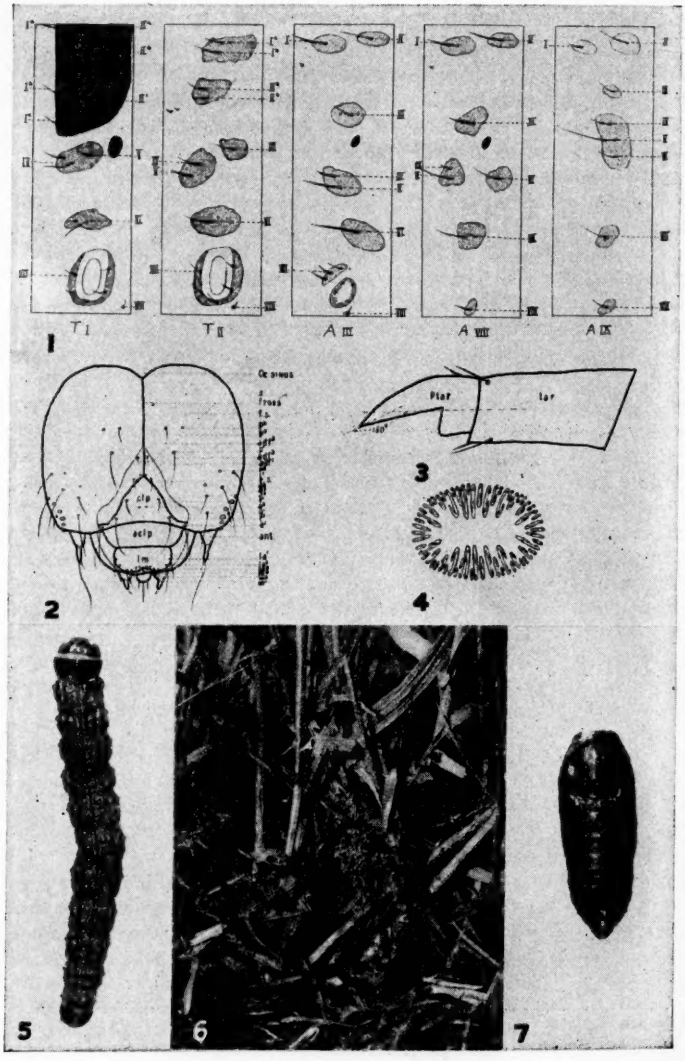
The larvae constructed sheltered tubes at the base of grass plants similar to those of **Crambus** (sod webworm) larvae. The shelter tubes (fig. 6) could be detected by the silken webbing and the pale green fecal material which were present along the upper end of the tube. Usually some blades of grass were incorporated into the sides of the tubes and the upper end was about one inch from the surface of the ground. The larvae were active and moved rapidly either forward or backward. They were also negatively phototropic. Blades of grass in the near vicinity of the shelter tubes were observed to be severely eaten along the sides of the blades. A few of the plants on which the larvae were located were dead.

On June 3, 1939, the first larva pupated and the adult emerged six days later. Five larvae were reared to adults during the course of the season. No definite period of emergence was observed. The last of the larvae pupated during the middle of August, 1939. The average pupal period for the six adults was six days.

The pupae (fig. 7) were light brown in color at first but changed to olive brown within two days. The cremaster was bluntly pointed. The spiracles resembled scars. Four setae of equal length were present on the edges of the cremaster. The six pupae averaged 7.0 mm. in length and 2.5 mm. in width. In the laboratory, the

*Contribution No. 478 from the Department of Entomology.

[1]These results were obtained in the course of work on Project No. 115a of the Kansas State Agricultural Experiment Station under the direction of Roger C. Smith.


T I
T II
A III
A VIII
A IX
1
2
3
4
5
6
7

larvae all pupated within the shelter tubes, but no pupae or empty pupal skins were found in the field.

The adults were identified by Dr. W. T. M. Forbes, to whom the author is greatly indebted. The moths were uniformly light gray in color and the prominent, labial palpi extended over the vertex. The wings were held in roof-like manner over the abdomen. No adults were observed in the fields nor at lights during the season. Other specimens in the departmental collection were collected during June to September in Riley county, at Onaga (F. F. Crevecour) and Abilene (A. B. Klots).

LITERATURE CITED

Busck, A.—New American Tineina. Ent. Soc. Wash., Proc. 8:93. 1906.

Forbes, W. T. M.—The Lepidoptera of New York and Neighboring states. Cornell Agric. Exp. Sta. Memoir 68:253. 1923.

Explanation of Plate of **Stenoma mistrella** Busck.

1. Setal map of a full grown larva of Stenoma labeled after Heinrich (1918): "Note on the European corn borer (**Pyrausta nubilalis** Hubner) and its nearest American allies, with description of larvae, pupae and one new species." Jour. Agr. Res. 28(3):171-178. Nov., 1918. Stenoma larvae differ from **Nomophila noctuella** D. & S. which it most closely resembles in that setae IV and V of abdominal segment A VIII are in front of setae VI, while in **Nomophila** setae IV and V are above setae VI. On abdominal segment A IX, setae I and V are present in Stenoma but both are absent in **Nomophila**.
2. Front view of the head of a mature larva of Stenoma. The symbols and labeling follow those of Heinrich. Note the small size of the clypeus and the relatively broad, clear area along the dorsal border of the clypeus.
3. A lateral view of pretarsus and tarsus of a thoracic leg of Stenoma. Note the shape of the thumb and position of tarsal setae.
4. Chochet of abdominal proleg showing the triordinal hooks which are also typical of **Crambus** sp.
5. A fully grown larva of Stenoma (x5). Note the dorso-median dark stripe and the single dark lateral stripe on each side.
6. Shelter tubes on brome grass showing the fine silken webbing, which is characteristic of this species, above the fecal pellets.
7. Dorsal viw of the pupa of **Stenoma mistrella** (x8).

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NOTICE OF ANNUAL MEETING

The 16th Annual Meeting of the Kansas Entomological Society will be held March 30, 1940, at the University of Wichita, Wichita, Kansas.

Members wishing to present papers should submit titles to the Secretary not later than February 20, 1940.

H. H. WALKDEN, Secretary-Treasurer
1204 Fremont, Manhattan, Kansas.

NOTES ON TEXAS PHYLLOPHAGA WITH DESCRIPTION OF ONE NEW SPECIES (COLEOPTERA, SCARABAEIDAE)[1]

H. J. Reinhard, College Station, Texas

The following new species has been awaiting description for several years, and with the recent accumulation of additional specimens it now appears desirable to publish the same. The types are in the Texas Agricultural Experiment Station collection.

Phyllophaga sodalis, n. sp.

Form oblong, slightly widened behind, dark castaneous to piceous, surface above glabrous, distinctly shining. Clypeus broadly emarginate, margin narrowly reflexed; punctures moderately coarse, close, well impressed; suture sinuate. Front convex, coarser and more deeply punctate than clypeus. Antennae with ten segments. Thorax irregularly convex above, widest at middle, sides subangulate, serrate; punctures variolate, coarse to very coarse, rather sparsely and irregularly spaced at middle of disc becoming closer at sides and confluent near anterior angles; latter acute. Mesosternum finely, evenly punctured, clothed with shortish, not very thick yellowish hairs. Scutellum with intermixed fine and moderately coarse punctures at sides, disc usually smoother. Legs shining reddish brown, tooth of claw strong, acute, median. Elytra rugulose, punctures fine, not close and rather indistinct; sutural costae well marked, others obsolete or but vaguely defined near apical extremity. Abdomen shiny, with sparse, fine, setiferous punctures at sides, segments five and six more coarsely punctate. Pygidium moderately polished, finely punctured on basal half, more sparsely so near apex and sides.

Length, 18-21 mm.; width, 9-11 mm.

Male. Antennal club distinctly longer than funicle, usually somewhat paler in color. Abdomen broadly flattened at middle; fifth ventral segment with a strongly elevated, broadly arcuate, transverse roughened ridge, posterior to which the segment is sharply declivitous to hind margin; sixth segment deeply, transversely concave, surface roughened at middle, anterior margin obliquely raised at sides. Hind tibia deeply excavated at base of fixed spur; latter convex on inner face, moderately bowed, slender, subacute; outer spur distinctly longer, flattened and broader to apex. Pygidium strongly convex, about one-third broader than long, apex broadly rounded.

Female. Antennal club shorter than funicle. Abdomen hardly flattened on median line; last ventral segment broadly impressed at middle, beset with coarse, decumbent, yellowish hairs, apical margin

[1]Contribution No. 558 from the Division of Entomology, Texas Agricultural Experiment Station.

broadly, deeply emarginate. Pygidium noticeably flattened beyond middle above. Hind tarsi distinctly shorter than in male.

Holotype male and Allotype female, Milano, Texas, May 14, 1939 (Ted McGregor). Paratypes: 16 males and 1 female, Milano, Texas, May 14 and 23, 1939 (Ted McGregor); 4 males, College Station, Texas, April 24-May 20, 1930 (H. J. Reinhard); 1 male, Austin, Texas, April 18, 1931, without collector's label; 1 male, Ranger, Texas, May 8, 1935 (H. L. Clearman); 3 males, Pleasanton, Texas, April 24, 1938 (J. E. Gillaspy); 1 male, Stephenville, Texas, April 5, 1938 (Neal Randolph); 2 males and 1 female, Cameron, Texas, April, 1938; May, 1939 (C. E. Heard); 1 male and 1 female in the Kansas University collection, labelled Colorado Co., Texas, April 5 and 10, 1922, U. of K. Lot 1112 and 1113 (Mrs. Grace Wiley).

The species is closely related to P. prunina Lec. but differs widely in coloration; the elytra show no trace of pruinosity and are distinctly shiny. Other minor distinctions may be listed as follows: thoracic puncturation sparser, less regular, usually coarser; elytra rugulose; and male antennal club slightly longer. There are no marked differences in the genitalia.

Phyllophaga pleroma, n. n.

Phyllophaga plena Reinhard, Jr. Kans. Ent. Soc., Vol. 12, 1939, pp. 49-51.

I am indebted to L. W. Saylor for calling my attention to the prior use of **plena** by Fall (Jr. N. Y. Ent. Soc., Vol. XL, 1932, p. 199) in **Listrochelus**, which is now considered a synonym of **Phyllophaga**. This synonomy was recently published by Saylor, (Proc. U. S. N. M., Vol. 86, 1939. p. 159).

Phyllophaga renodis Reinhard

Phyllophaga renodis Reinhard, Jr. Kans. Ent. Soc., Vol. 12, 1939, pp. 48-49.

Two additional specimens of this species, including the hitherto unknown female sex, were recently sent to me by M. W. Sanderson for comparison with the holotype. Both examples are from Texas and were taken in August, 1933, at Weslaco and in Cameron County by Dr. S. W. Bromley. They differ from the type in having the elytra wholly black but agree closely in other essential details.

Female. Similar in form to male. Antennae brownish black, club rather slender, hardly exceeding one-half length of funicle. Abdomen evenly convex at middle, surface moderately shining, sparsely punctate at sides; fifth ventral segment with a shallow transverse groove near apical fourth; sixth segment short, hind margin entire. Pygidium transverse, flattened at middle on basal half, coarsely punctate, moderately polished. Hind tarsi shorter than tibiae and hardly as stout as in male. Length, 16 mm.; width, 10 mm.

TELENOMUS OVIVORUS (ASHMEAD), AN EGG-PARASITE OF THE FALSE CHINCH BUG

F. M. Wadley
Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture

Observations on an egg-parasite of the false chinch bug, **Nysius ericae** (Schill.), were made in 1914, when the writer was a seasonal assistant to F. B. Milliken in the Division of Truch Crop and Stored Product Insect Investigations of the Bureau at Garden City, Kansas. Later Mr. Milliken and the writer prepared a manuscript on the species, but it was not published because of doubt as to the idenity of the insect. In 1938 the writer found that some of the specimens taken in 1914 were in the National Museum; they were kindly determined by C. F. W. Muesebeck of the Bureau's Division of Insect Identification as **Telenomus ovivorus** (Ashmead). The species was described as **Phanurus ovivorus** from specimens reared from hemipterous eggs collected near Washington, D. C. (Ashmead, 1893), and has apparently not been mentioned in the literature since. According to Mr. Muesebeck the generic name **Phanurus** is now regarded as a synonym of **Telenomus.** The writer and Mr. Milliken observed this parasite only at Garden City, but intensive work was not done at other localities.

The parasite was first noticed in May 1914, reared from an egg of **Nysius**; a few specimens that had been taken in the fall of 1913 were found to be similar. Later numerous specimens were reared, and some adults of the parasite were swept from a variety of plants near swarms of the false chinch bug.

The false chinch bug placed its eggs among trash and plant detritus on the soil, in the cooler part of the season. In summer it moved to plants, placing the eggs among fine parts. In June the gaillardia common in the region received many eggs in the flower heads. Later a grass, **Eragrostis,** was favored, eggs being placed in the glumes. False chinch bug adults were abundant early in the summer, became scarce in midsummer, and were seen in only moderate numbers early in the fall.

The parasite tended to follow these ups and downs. In May it was reared sparingly from eggs found on soil. In June it became quite abundant. The flower heads of gaillardia containing false chinch bug eggs seemed to afford the parasite a good opportunity. Later in the season the species was again scarce. The eggs in **Eragrostis** were hardly at all parasitized, only one parasite having been reared from this grass. The fact that the glumes closed tightly over the eggs may have been partly responsible. Table 1 will give an idea of the maximum abundance of the parasite.

Table 1.—Rearing data from collections of egg-infested gaillardia

Number of flowers	Date collected	Number of Nysius nymphs	Number of parasites
11	June 12	193	77
12	June 24	96	455
3	June 29	3	1

Female parasites oviposited readily in Nysius eggs in the laboratory, and development was completed in 11 to 13 days under June temperatures. Collections of flowers continued to yield parasites up to 12 or 13 days after collection. Unfertilized females produced only male progeny; females predominated in field material.

It seems that this parasite might be at times a definite check on the increase of Nysius ericae in this region.

LITERATURE CITED

Ashmead, W. H.—1803. Monograph of the North American Proctotrypidae. U. S. Nat. Mus. Bul. 45.

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DISTRIBUTION NOTES ON AMBLYSCIRTES NYSA EDWARDS. (LEPIDOPTERA: HESPERIIDAE)

William D. Field, Lawrence, Kansas*

Heretofore this species has been thought to be native only to Arizona, New Mexico and Texas. This species has also been taken in Scott, Harper, Sumner, Montgomery and Douglas counties, Kansas. In Scott County only the males have been taken and these only late in the fall. The writer has found that it is a rather common species in Douglas County being taken from May through October. Mr. D. Stallings and Dr. Turner of Caldwell, Kansas have taken four pairs of this species during August of 1939, showing that the species is also native to Sumner County. The writer has a specimen from Beaver, Carroll County, Arkansas.

*Contributed from the Department of Entomology, University of Kansas.

NEW CORIXIDATE FROM CHINA, MANCHURIA AND FORMOSA

H. B. Hungerford, Lawrence, Kansas*

The determination of the Corixidae from the Orient has been exceedingly difficult because of the impossibility of recognizing many species the descriptions of which are inadequate. Recently I have been able to satisfy myself as to the identity of these and submit the following as new.

Sigara crassipala n. sp.

Size: Length 9.6 mm. to 10 mm.; width of head across the eyes, 3 mm.

Color: General facies medium brown. Head, legs and venter yellowish except median part of mesosterum and basal segments of abdomen, which may be more or less embrowned. The pronotum crossed by eight or nine brown stripes which are a little wider than the pale interspaces; the pale figures of the hemelytra broader at base of clavus than elsewhere, transverse, more or less broken and undulate; an irregular dark line between corium and membrane. The faint median carina on anterior part of pronotum often pale, thus dividing first two transverse dark stripes.

Structural Characteristics: Head of male, when viewed from above, a little less than half the length of the pronotal disk, and frontal arch moderately produced. Facial impression of the male oval moderately deep and extending upwards between the eyes but not touching their inner angles; some fine hairs on the face. Interocular space a little narrower than the width of an eye; postocular space narrow, broadest at inner angle of the eye. The third antennal segment is to the fourth as 13 is to 10. Slight longitudinal carina on anterior fourth of pronotum. Surface of pronotum, clavus and most of corium finely rastrate. Lateral lobe of prothorax as shown in figure 10 on plate I. Metaxyphus as shown in figure 4, plate I. Abdominal dorsum as shown in figure 12, plate I. Male genital capsule as shown in figure 2, plate I. The pala characteristically thickened on dorsal side, as shown in figures 1 and 3, plate I. No stridular patch on anterior femur. The measurments of the middle leg as follows: Femur:tibia:tarsus:claws::142:58:40:50. Hind leg measures: Femur:tibia:1st tarsal:2nd tarsal::76:70:85:35.

Described from four males and one female from China in the Francis Huntington Snow Collection, University of Kansas. One specimen from Hou Hu, Nanking 7, 1929. Chi Ping, collector. Three taken by Haas in China. There is a series of 30 of these in the collection at Vienna labeled by me sp. X and a series in "Paris

* Contributed from the Department of Entomology, University of Kansas.

Museum, Se-Tchouen, A David, 1875" which I labeled 2879b, and another series from a different locality labeled 28798, according to my notes. These series in Vienna and Paris I would like to make paratypes, but it is impossible under present circumstances to re-examine them.

Comparative Notes: This species is perhaps more closely related to **S. spatulata** described below than to any other. However, **Sigara ussuriensis** Jaczewski which I have from North Manchuria, **Sigara mandshurica** Jaczewski, a long series of which I have from Manchuria, and **Sigara kolthoffi** Lundb., which I have from China, all belong to the same group of large species. The greatly thickened male pala is like that of **Sigara harrisii** (Uhler) of this country.

Sigara spatulata n. sp.

Size: Length 9.2 to 10 mm.; width of head across the eyes 3 mm.

Color: General facies dark brown. Head, legs and venter pale, except vertex which may be embrowned and the venter which may be more or less suffused with black. The pronotum crossed by seven complete pale bands, often with a short eight one, these narrower than the nearly black interspaces. The hemelytra marked by narrow, transverse, wavy, pale lines, somewhat broken. At base of clavus the pale bands, as broad as dark ones; elsewhere much narrower. Distal angle of corium bordered by a more or less complete pale V shaped figure.

Structural Characteristics: Head of male, when viewed from above, about half the length of the pronotal disk and frontal arch moderately produced. Facial impression of the male oval, moderately deep and extending upwards between the eyes but not touching their inner angles; some fine hairs on the face. Interocular space about three-fourths width of an eye. Postocular space very narrow except near the inner angle of the eye. The third antennal segment is to the fourth as 13 is to 10. Very slight longitudinal carina on anterior fourth of pronotum. Surface of pronotum, clavus and corium rastrate. Lateral lobe of pronotum as shown in fig. 9, plate I. Metaxyphus slender, elongated, as shown in fig. 8, plate I. Abdominal dorsum as shown in fig. 11, plate I. Male genital capsule as shown in figure 6, plate I. The male pala as shown in figures 5 and 7, plate I. No stridular patch on anterior femur. The measurement of the middle leg as follows: Femur: tibia: tarsus: claws :: 128:50:40:45. Hind leg measures: Femur:tibia:1st tarsal:2nd tarsal::68:70:85:35.

Described from 20 specimens from Manchuria in the Francis Huntington Snow Collections. They are labeled as follows: "Manchuria; Tehli, Lesser Khingan Mts., July 20-24, 1939. A. S. Loukashkin," 1 male and 1 female; "Manchuria Shitonhotze St., Aug.

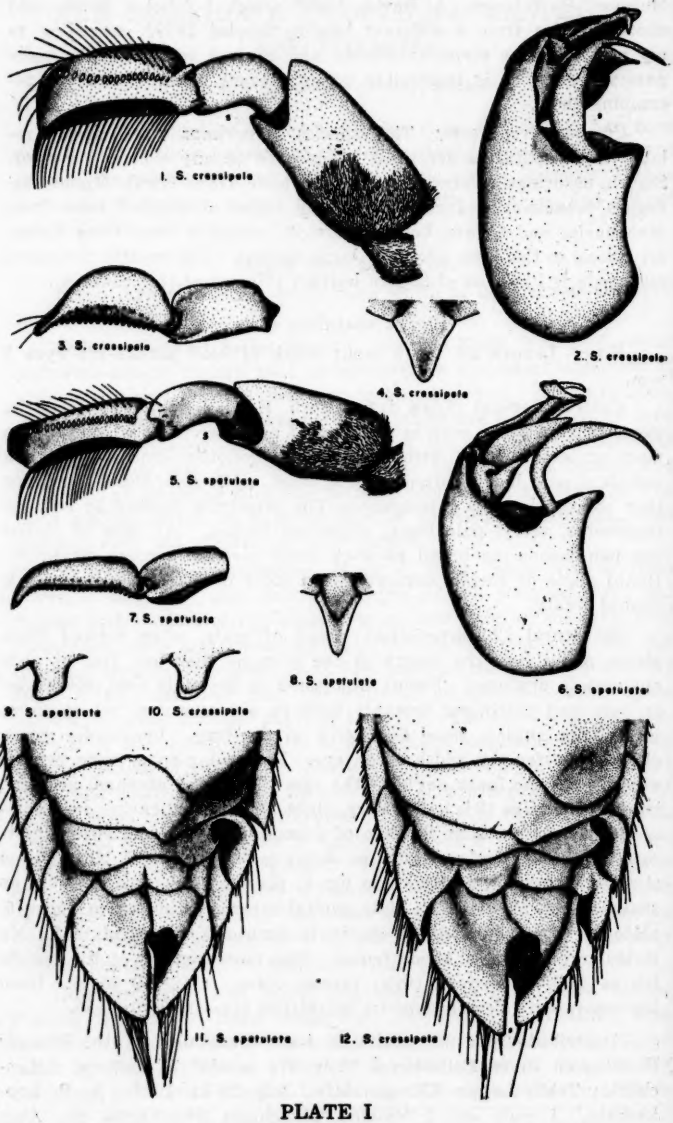
1. S. crassipala
2. S. crassipala
3. S. crassipala
4. S. crassipala
5. S. spatulata
6. S. spatulata
7. S. spatulata
8. S. spatulata
9. S. spatulata
10. S. crassipala
11. S. spatulata
12. S. crassipala

PLATE I

1-15, 1939. A. S. Loukashkin," 5 males and 5 females; "N. Manchuria, Harbin, Sungari River Valley, Aug. 17, 1939. B. Skvortzev," 3 males and 1 female; "N. Manchuria, 100 miles east of Harbin, Aug. 18, 1938. B. Skvortzev," 1 male and 1 female; "N. Manchuria, Cheng Chin, Lesser Khingan, June 22, 1938. A. S. Loukashkin," 1 female; "Harbin, Manchuria, May 18, 1937. M. A. Weymarn," 1 male.

Comparative Notes: This species differs from S. **kolthoffi** by its smaller size, its narrower pale markings of the pronotum and hemelytra and by the shape of the male genital structures.

Sigara weymarni n. sp.

Size: Length 6 mm. to 6.5 mm.; width across the eyes 1.8 mm. to 2.1 mm.

Color: General facies medium brown. Head, legs and venter pale except mesosterum, metasternum and basal segments of abdominal venter may be more or less embrowned or black. The pronotum crossed by about six pale stripes which are sometimes narrower, sometimes broader than the nearly black stripes. The hemelytra marked by transverse, more or less wavy and somewhat broken pale lines. The pale markings at inner angle of clavus broader than elsewhere. A pale line separates corium from membrane; this is bordered on the membrane by a dark band from which arise the dark, wavy transverse figures of the membrane.

Structural Characteristics: Head of the male, when viewed from above, a little more than half the length of the pronotal disk; frontal arch rounded, but little produced. Facial impression of the male shallow, its margin ill-defined. Interocular space a little narrower than the width of an eye; the third antennal segment is to the fourth as 23 is to 20. Slight longitudinal median carina of anterior fourth of pronotum. Pronotum, clavus and anterior half of corium moderately rugulose. Lateral lobe of prothorax as shown in figure 3, plate II. Metaxyphus short, as shown in figure 7, plate II. Abdominal dorsum of male as shown in figure 10, plate II. Male genital capsule as shown in figure 4, plate II. The pala of male with upper basal angle almost right angulate. An oblique depression breaks the row of pegs into series and separates the higher basal level of the palar face from the distal portion. There are from 17 to 19 pegs in each row. A distinct stridular patch on the anterior femur. The pala is shown in figure 8, plate II. The measurements of the middle leg as follows: Femur:tibia:tarsus:claws::86:36:25:30. Hind leg measures: Femur:tibia:1st tarsal:2nd tarsal:: 47:47:57:23.

Described from the following series in the Francis Huntington Snow Entomological Museum of the University of Kansas: 2 males and 4 females labeled "Harbin, Manchoukuo, May 18, 1937. Michael A. Weymarn." (Holotype and allotype are taken from this series);

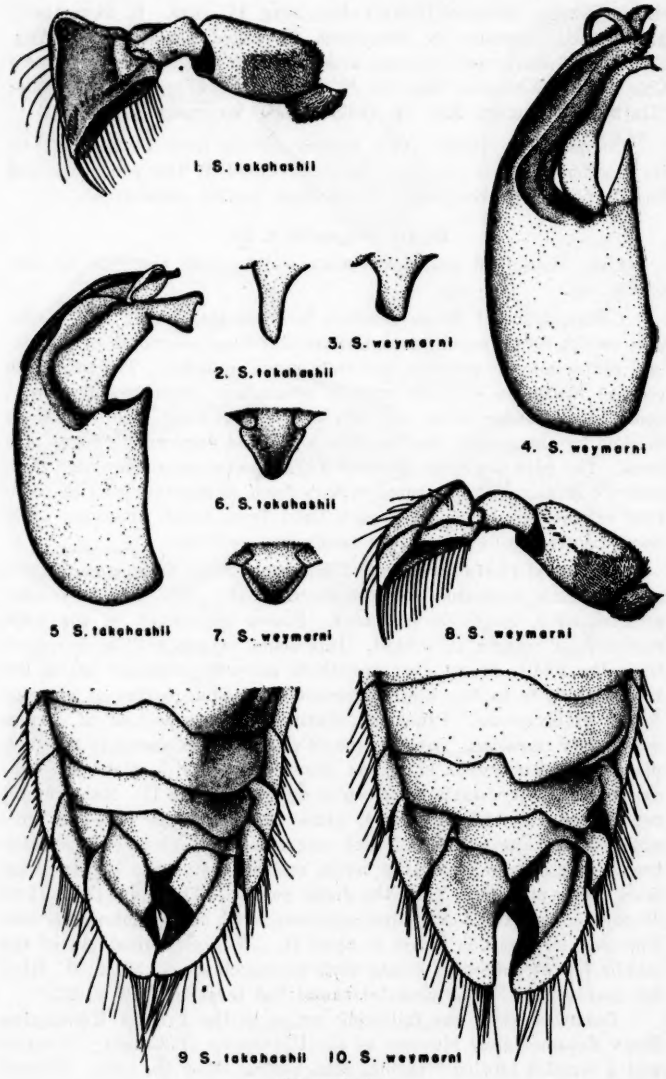
1. S. takahashii
2. S. takahashii
3. S. weymerni
4. S. weymerni
5 S. takahashii
6. S. takahashii
7. S. weymerni
8. S. weymerni
9 S. takahashii
10. S. weymerni

PLATE II

In addition, there are long series from the following places: "N. Manchuria, Asheho River Valley, Sept., 1938. A. S. Loukashkin," and another series taken by M. Nikitin, same place and date; "N. Manchuria Harbin, Sungari River Valley, June 29, 1938. B. Skvortzov"; "Manchuria Shitonhotze St., Aug. 1-15, 1939. A. S. Loukashkin"; "Manchuria, Harbin, Aug. 1, 1938, Marshy lake in Sungari River Valley. M. I. Nikitin."; "Manchuria, Marshy pond in Valley of Asheho River near Harbin under thin ice, Nov. 1-2, 1938. M. I. Nikitin."

Comparative Notes: This species belongs to the subgenus Subsigara Stickel and is between **Sigara scotti** (D & S) and **S. falleni** (Fieb.) in size and in the shape of the male pala.

Sigara takahashii n. sp.

Size: Length 6.3 mm.; width across the eyes 2.03 mm.

Color: General facies medium to light. Head, legs and venter pale to yellowish brown with the venter sometimes partly suffused with black. The pronotum crossed by seven or eight brown stripes, slightly narrower than the pale interspaces. The hemelytra marked by wavy, transverse, more or less anastomosing, narrow, brown figures, which cover the membrane also. The membrane but faintly separated from the corium.

Structural Charactristics: Head of male, when viewed from above, two-thirds the length of the pronotal disk, frontal arch broadly rounded and moderately produced beyond the anterior margin of the eyes. Facial impression of the male deep, broad beneath the eyes, margins converging at the inner angle of eyes and the impression definitely narrowed above. The lateral slopes of the depression densely covered with pale hairs beneath the eyes. Interocular space a little wider than an eye; the third antennal segment is to the fourth as 28 is to 20. Faint median longitudinal carina on anterior fourth of pronotum. Dorsal surface of pronotum and hemelytra shining—faintly rugulose. Lateral lobe of pronotum as shown in figure 2, plate II. Metaxyphus as shown in figure 6, plate II. Abdominal dorsum of male as shown in figure 9, plate II. Male genital capsule as shown in figure 5, plate II. The male pala as shown in figure 1, plate II. The patch of hairs on the femur in some views appears in definite rows. The measurements of the middle leg as follows: Femur:tibia:tarsus:claws::80:42:27:38. Hind leg measures: Femur:tibia:1st tarsal:2nd tarsal::45:45:54:22.

Described from 2 males and 2 females from Formosa taken by R. Takahashi and labeled as follows: "Taihoku, Formosa, June 30, 1929" (1 male and 2 females); "Taihoku, Formosa, Aug. 24, 1921" (1 male). Types in Francis Huntington Snow Entomological Collections, University of Kansas.

Comparative Notes: Dr. Matsumura described C. **ishidae** from Formosa from a single female specimen and until male specimens can be definitely associated with it, the species cannot be fixed precisely. The interocular space is narrower and the frontal arch more produced than is S. **takahashii.** Also, the pale figures of the hemelytra are much broader in relation to their transverse length, giving it a distinctly different pattern from the species here described.

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A NEW PHYLLOPHAGA (SCARABAEIDAE:COLEOPTERA) FROM JAMAICA

Milton W. Sanderson, University of Arkansas

Phyllophaga darlingtoni n. sp.

Length 13 mm.; width 6.5 mm.

Body elongate, nearly parallel; color above shining brown, the head and prothorax darker than elytra. Head and clypeus moderately and shallowly punctured; clypeal margin rather deeply emarginate and widely reflexed. Prothorax nearly twice wider than long, the sides convergent both anteriorly and posteriorly from the middle. Surface rather finely and evenly punctured. Elytra more coarsely punctured than thorax, the punctures becoming confused near suture in basal one-third of elytra. Discal costa faintly evident, the marginal one obliterated. Pygidium strongly convex, alutaceous, and with scattered punctures, each bearing a fine yellow hair. Abdomen convex, closely and strongly punctured, and each segment bearing a conspicuous transverse patch of yellow hairs. Posterior margin of penultimate abdominal segment with two small triangular teeth separated from each other by width of hind tibia at its middle. Posterior tibia without teeth, and with two slender, movable spurs, the longer one equal to the length of the first tarsal segment, the other about half as long. Claws strongly curved and with a small intramedian tooth. All tarsi very densely clothed with short hairs on lower side. Antenna 8-segmented, the three segmented club longer than the four preceding segments combined.

Holotype male, Mandeville, Jamaica, A. E. Wight. Type in the collection of the Museum of Comparative Zoology, Harvard College.

The claspers are divided, symmetrical, and strongly recurved. This species cannot be compared with any other known West Indian species, and the densely hairy tarsi are quite distinctive.

STUDIES IN NEW WORLD PLECIA (BIBIONIDAE-DIPTERA)

PART I

D. Elmo Hardy, Lawrence, Kansas*

Comparative studies of the male genitalia throughout the New World **Plecia** have proved that these much neglected structures are of most vital importance in the systematics of this genus. With the exceptions of **americana, lopesi** and **nearctica** the species discussed in this paper belong in the so-called "niger" group of **Plecia**; those species in which at least the males are chiefly black.

Plecia americana n. sp.
(Figs. 1a, 1b)

This species is related to **confusa** Loew in having the rostrum much shorter than the head and the thorax entirely rufous. Up to date this has been considered the same as **confusa** but study of the Neotype proved **confusa** to be a tropical species, very different from this common American form. The only marked differences other than male genital characters are its much smaller size and more compact, shortened antennae, the segments of the flagellum being wider than long (with exception of the first segment). The species can be easily separated by the shape of the genital sclerites, it is not necessary to dissect the genitalia to separate it on these characters.

Male genitalia: Ninth sternum deeply concave on posterior margin, cleft about one-half the length of the segment, with a membranous mound in the middle; posterior lateral margins moderately produced; harpagones very small (fig. 1a). Ninth tergum broad, with a small 'v' shaped excision in the middle on the hind margin (fig. 1b).

Male length: body, 4.5-5.5 mm.; wings, 5-6 mm.

Female length: body, 5-6 mm.; wings, 7 mm.

Holotype male, allotype female and forty paratypes, eighteen males, twenty-two females, from Penn., Fla., Apr. 30, 188 (A. S. Stevens), (this locality is probably meant to be Pensacola, Florida). Other paratypes from the following localities:

Florida: two males, one female, Maynard; one female labeled Florida.

Georgia: Saint Simon Island, Apr. 22-May 12, 1911 (J. C. Bradley).

Mexico: San Rafael, V. C. (Townsend); Cordoba (F. Knab).

North Carolina: Littleton, May 12-16, 1902, N. C. Dept. Agri. Cat. No. 306, (bred from larvae in damp rotting wood on under side of log in woods).

* Contributed from the Department of Entomology, University of Kansas.

Texas: One male, one female, Waco (Belfrage); one female, Dallas.

No data: four males, three females.

Dispensation: Holotype, allotype and a large share of the paratypes returned to United States National Museum. Paratypes to be deposited in Snow Entomological Collection, American Museum of Natural History, Philadelphia Academy of Science, Cambridge Museum, Cornell University Collection and North Carolina Department of Agriculture.

Plecia avicephaliforma n. sp.

(Figs. 2a, 2d)

This species is related to **quadrivittata** Williston in having four shining stripes down the mesonotum, the median stripe being divided by a narrow gray line. It differs from this species in having the rostrum shorter than the head; the scutellum opaque (shining in **quadrivittata**); vein R_{2+3} curved or bowed before entering the costa. The male genitalia is very distinctive as is pointed out in the description; the specimens are also slightly smaller.

Male—Entire black species. **Head:** Antennae nine segmented, the segments short and compressed; rostrum about equal to the antennae in length, shorter than the head. **Thorax:** Opaque, lightly pruinose, except for shining stripes on dorsum; upper portions of sternopleurae with sparse brownish hairs, mesonotal furrows and margins of notum with scattered yellowish hairs. Legs and abdomen with brown to black pile. **Wings:** Brownish fumose, veins dark brown, stigma but slightly darker than the membrane; vein R_1 ends at about two thirds the distance from end of subcosta and R_{2+3}, vein R_{2+3} strongly curved into the costa (fig. 2a). Radio-medial crossvein situated at about the middle of the distance from the m-cu crossvein and the fork of media.

Male genitalia: Sternum rather broad, developed apically into two pairs of small lobes, the lateral pair larger more rounding, the median pair small, sometimes scarcely divided and simulating a single development (fig. 2b). Harpagones simple, with a long beak-like tooth projecting inwardly (avicephaliform) as seen from a lateral view (fig. 2c); scarcely visible from ventral view (fig. 2b) Tergum gently concave with a broad flat topped development medianly (fig. 2d).

Length: body, 3.3-3.7 mm.; wings, 4 mm.

Female unknown.

Holotype male, Diamantina, Minas Geraes, Brazil, Nov. 14-18, 1919 (Cornell University Expedition). One paratype male, same data as type.

Holotpye returned to Cornell University, paratype retained in the Snow Entomology Collection.

Plecia edwardsi n. sp.

(Figs. 3a, 3b)

This is a sexually dimorphic species related to **Plecia seminitens** Edwards, the males differing in having the mesonotum almost entirely shining, not divided into stripes by gray vittae, only a small slightly grayed spot behind the humeral ridges and a narrow line of gray along lateral margins of mesonotum. The median groove of the notum is as deep as the lateral ones; the posterior tarsal segments are noticeably swollen and rounding. The genitalia are also very different, **edwardsi** does not have the posterior margin of the ninth tergum nearly straight and the harpagones bilobed as does **seminitens** Edwards. The females differ in having the thorax entirely rufous. Vein R_{2+3} is markedly curved in the males and more oblique in the females.

Male genitalia: Ninth sternum slightly convex on median posterior margin with a mound-like membranous gibbosity in the middle, posterior lateral margins not greatly developed, irregular, with two to three small rounded developments. Harpagones simple and vertical in position, not lateral as in **seminitens**, terminating in a small point apically and a blunt rounded projection in inner side (fig. 3a). Ninth tergum deeply U shaped concave (fig. 3b).

Male length: body, 2.5-3 mm.; wing, 3-3.2 mm.

Female length: body, 2.7-3 mm.; wing 3.5-3.7 mm.

Holotype male, allotype female, three male and two female paratypes: Jussara, Angra Dos Reis, Brazil, Oct. 26, 1935 (S. Lopes et H. Lent).

Holotype, allotype and two paratypes in Snow Entomology Museum, one paratype deposited in British Museum; two paratypes deposited in United States National Museum.

Plecia impilosa n. sp.

(Figs. 4a, 4b)

This species is related somewhat to **grisea** Edwards and **maura** Walker, it differs in coloration and is not so consistantly grayed as is **grisea**; the wings are more yellowish and the genital characters are distinctive.

Male.—Chiefly black species. **Head:** Rostrum developed, longer than the antennae, antennae eight segmented; compound eyes not noticeably divided into two portions. **Thorax:** Chiefly bare, with only microscopic hairs on upper portions of sternopleurae and on dorsum. Humeral ridges brick-red; margins of mesonotum, scutellum, metanotum, pteropleurae, metapleurae and hypopleurae with an ochraceous to reddish tinge, this sometimes extends along the mesonotal furrows. Mesonotum chiefly gray dusted, this pruinosity is more distinct on the front sides and in the middle of the furrows; mesopleurae and

sternopleurae gayed, the latter subshining on lower portions. Notum with two rather deep furrows and with a faint median one between, these terminate in a pit-like area just before the scutellum. Legs and abdomen black with dense black pile. **Wings:** Yellow fumose, costal cell and stigma brown, veins dark brown to black; vein R_{2+3} gently curved into the costa.

Genitalia: Ninth sternum broad, posterior lateral margins strongly produced, posterior median margin with a U shaped concavity and a mound-like elevation in the middle. Harpagones rather sharply pointed, as seen from a ventral view (fig. 4a). Ninth tergum deeply concave, the cleft extending over one-half the length of the segment; with a broad, somewhat square protuberance in the center (fig. 4b).

Length: body, 6-7 mm.; wing, 7-8 mm.

Female.—The reddish tinge is more pronounced and more extensive, marking off four opaque black stripes down the dorsum; pleurae entirely tinged; pile even more microscopic; antennae eleven segmented and the wings are more yellow fumose.

Length: body, 8-9 mm.; wing 9.5-10 mm.

Holotype male, allotype female and forty-five paratypes, thirty-two males and thirteen females; West border Matto Grosso, Brazil, May, 1931 (R. C. Shannon).

Holotype, allotype and twenty-six paratypes returned to the United States National Museum. Two males and one female, deposited in the British Museum; one male and one female in the American Museum; two males in Museum of Comparative Zoology at Cambridge, Massachusetts and twelve paratypes retained in the Snow Entomological Collection.

Plecia lateralis n. sp.

(Figs. 5a-5c)

This species is near *grisea* Edwards separating most conveniently by use of the male genitalia; the antennae of the male are nine segmented instead of eight, the furrows of the notum more district, humeri and scutellum not reddish tinged, veins R_{2+3} more vertical, the occiput is densely black haired, the sternopleurae with conspicuous dark hairs above and the abdomen dark haired.

Male.—In addition to the above, the rostrum is very thick and pronounced, slightly shorter than the antennae. **Thorax:** Notum rather evenly gray pruinose, slightly more grayed in the furrows and on the margins. Pleurae opaque brown to black; legs and abdomen brown; halteres brownish yellow. **Wings:** Brown fumose, stigma concolorous with the membrane. Vein R_1 ending beyond the middle of the distance from subcosta to vein R_{2+3}; R_{2+3} almost vertical with but a very slight curve near base; fork of media situated just before middle of distance from r-m crossvein to the fork of Rs.

Genitalia: The ninth sternum is broader than long, with a trough-like concavity in the middle on the hind margin, posterior lateral margins not produced. The harpagones are rather long, appearing simple from ventral view, and more lateral in their position (fig. 5a); in this respect they are more like **Penthetria** than any other **Plecia** which have been observed; from a lateral view an inward developed process can be seen near their bases (fig. 5b). Ninth tergum with a slight convexity in the middle on hind margin (fig. 5c). Entire genitalia densely haired.

Length: Body, 5.5 mm.; wing, 5.5 mm.

Female unknown.

Holotype male, San Miguel, Hidalgo, Mexico, (W. M. Mann). Returned to Cambridge Museum of Comparative Zoology.

Plecia lopesi n. sp.
(Figs. 6a-6c)

This species is related to **bicolor**, differing but little in characters other than those of the male genitalia. The specimens are, however, larger in size, being almost twice the size of **bicolor** and the wings are slightly darker fumose. The dorsum of the thorax is not so shining as in **bicolor** and that of the male is tinged with brownish. The genital characters separate it distinctly.

Male.—Head: Rostrum developed slightly longer than the antennae and extending back beneath the face, palpi slender and apparently four segmented. Antennae black, faintly yellowish at bases of segements; eight segmented, first segment longer than second, third slightly longer than first two, fourth, fifth and sixth equal in size, seventh about three-fourth the length of the third, and eighth segment about one-half the width and length of the seventh (fig. 6a). Ocellar tubercle very prominent. **Thorax:** Dorsum dull orange with three rather indistinct longitudinal grooves which converge before the scutellum; pile sparse and microscopic, composed of fine, recumbent brownish hairs; pleurae black with a rufous tinge. Stems of halteres yellow-brown, knobs brownish yellow. Legs very slender, black; pile entirely black. Basitarsi equal to the next three tarsal segments in length, pulvilli bright yellow. Abdomen black with rather dense black pile. **Wings:** Smoky yellow fumose, costal cell and stigma brown; the fork of third vein arising slightly before the end of second vein and slanting gradually into the costa, forming about a sixty-five degree angle with R_{2+3}. Fork of fourth vein arising almost half way between the posterior crossvein and the fork of the third vein. Hind branch of fifth vein fork (Cu_2) curved downward at its apex, anal cell widely opened.

Male Genitalia: Ninth sternum with a sharp triangular shaped projection in the middle on its posterior edge, poserior lateral margins

not greatly developed, claspers broad and rather sharply pointed from ventral view (fig. 6b). Ninth tergum gently and broadly concave on posterior margin (fig. 6c).

Length: body, 6.5-7 mm.; wing, 7.5-8 mm.

Female—Aside from sexual characters the female differs in having the antennal segments more compacted; the pleurae with a slight reddish tinge. The dorsum of the horax is more brightly orange, and the specimens are of slightly larger size.

Length: body, 7mm.; wing, 9-9.5 mm.

Holotype male, Eug. Lefevre, San Paulo, Trav. (Lopes et Oiticica), I-XI-37. Allotype same date. Both in the Snow Entomological Collection.

This species is named after Dr. H. de Souza Lopes who is a very active collector in Brazil. A large share of the Brazilian material studied by the writer has been supplied by Dr. Lobes.

Plecia nearctica n. sp.

(Figs. 7a-7c)

This species is separable from bicolor Bellardi only by the male genitalia, these organs, however, possess very distinctive structures. The wings appear to be more consistantly darker brown fumose but this would not separate them conveniently. It is a widely distributed species but seems to be more abundant in Southern United States. The species is easily recognized by the development of the ninth sternum and harpagones.

Male genitalia: Ninth sternum somewhat narrowed distally with a small concavity on the posterior margin in the middle (fig. 7a). Claspers bilobed, both arms terminating in a "beak-like" point; the outer lobe is much stouter and vertical in position, visible from dorsal view (fig 7a); the inner lobe is smaller, more narrow and horizontal in position, directing inwardly and visible only from a lateral view (fig. 7b); the claspers are densly haired. The ninth tergum is gently concave on the posterior margin (fig. 7c).

Length: body, 4-5 mm.; wing, 4.5-5.3 mm.

Female.—The female is inseparable from **bicolor** except on a basis of geographical distribution or accompaniment of the male. The female of **nearctica**, however, have the wings more blackish fumose and the antennae are more compressed, the segments being shorter and broader, but these characters may be subject to variation.

Length: body, 5-6.3 mm.; wing, 5.5-7.3 mm.

This species is widely scattered but is apparently more common in Texas and Louisiana.

Holotype male and allotype female on same pin, Galveston, Texas May (F. H. Snow). Over one hundred and fifty paratypes from the following localities:

Costa Rica: one male, Dec. 1911 (W. M. Wheeler).

Guatemala: one male, Patulul (M. Bates); one male, one female, Puerto Barrios.

Honduras: one female, No. 503, 1921.

Louisiana: two males, two females, Vinton, fourteen miles south, Sept. 5, 1916 (E. G. Holt); four females, seven males Crowley, Aug. 24, 1911 (E. S. Tucker); five males, six females, Gueydan, May 4, 1925 at light (E. Kalmbach); seven males, five females, Morgan City, April 17, 1938 (John Standish); twelve males, fourteen females, Banton Rouge, May 12, 1934 (Lyman).

Mexico: one male labeled Mex.; one male, State of Colima (L. Conradt); one male, one female, Tehuantepec, Oaxaco; one male, one female, Ciudad, Vict. Tamps, May 15, 1937 (A. Stone); one male, two females, Yucatan (G. F. Gaumer).

Mississippi: one male, two females, Moss Point, Sept. 17, 1937 (G. L. Bond).

Texas: three males, three females, same data as type; one male, one female, Bexar Co., May 12, 1930; two males and one female, Colo. Co., May 11, 1922 (G. O. Wiley); one male, one female labeled Texas; five males, nine females, Orange, Sept. 4, 1916 (E. G. Holt); three females, one male, Dickenson Co., May, 1929 (F. M. Hull); twelve males, fourteen females, Brownville, May-June, by various collectors (Barber, Vickery, Webster, Mitchell and Hinds); one female, Houston, April 28 (Barber); two males, seven females, Victoria, April-Sept. on Pluchea sp. and **Ambrosia psilostachya** (Mitchell, Hinds).

Distribution of types: Holotype, allotype and a share of paratypes in the Snow Entomological Collection; other paratypes being deposited in United States Naional Museum collection, American Museum, Oklahoma A. and M. College, Britiish Museum of Natural History, Cambridge Museum of Comparative Zoology. Philadelphia Academy of Science, Cornell University and Texas A. and M. College.

Plecia persimilis n. sp.
(Figs. 8a-8c)

This species is very similar to **seminitens** Edwards and fits the original description of that species in most details. Dr. Edwards has compared a specimen with the type of **seminitens** and has kindly sent the writer a metatypic male for study.

In general characeristics these species are identical, however, the wings of **persimilis** are yellow to yellow-brown fumose instead of dark smoky fumose as in **seminitens** and the legs are rather consistantly rufescent tinged. The more important differences are in the genital structures. The posterior median margin is not produced as in **seminitens** and the harpagones not so thickened and blunt apically.

The harpagones are divided into two lobes, the inner being much smaller and located beneath the outer; harpagones rather narrow from a lateral view and only the large outer lobe is visible (fig. 8a). Ninth sternum with a small 'u' shaped cleft in the middle on posterior margin (fig. 8b). Tergum with a flat topped development projecting much beyond hind margin (fig. 8c).

Length: body, 2.8-3.5 mm.; wing, 4-4.2 mm.

Female unknown.

Holotype male, and six paratype males; San Paulo—Cantareira, (Serra) Brazil, July 9, 1934 (L. Trav. fº.).

Holotype and three paratypes returned to United States National Museum. One paratype presented to British Museum of Natural History and two retained in the Snow Entomological Collection.

Plecia pruinosa n. sp.

(Figs. 9a, 9b)

Allied to **grisea** and **lateralis** but the males possess very distinctive genital structures. They may be distinguished without dissecting the male genitalia by their longer, not so thickly built rostrum, somewhat pale based femora (yellowish in female), black halters and smoky brown fumose wings.

Males.—Head: Pruinose, rostrum produced as long or longer than the antennae; antennae nine segmented, counting nipple-like tip; occiput densely black haired. **Thorax:** Entirely pruinose, more grayed in the furrows and on the margins. Notal furrows distinct, humeral ridges yellow-red, humeri with patches of long black hairs; sternopleurae with only a few pale hairs above. Legs and abdomen brown to black, bases of femora slightly yellowed; pile of abdomen yellow-brown **Wings:** Vein R_{2+3} gently curved into costa, fork of media before one-half the distance from r-m crossvein to fork of Rs. Stigma slightly darker than the wing membrane.

Genitalia: Posterior margin of ninth sternum developed into a pair of heavily scleritized, outward projecting, clasper-like lobes and a pair of smaller, rounded lobes on posterior lateral margins. Harpagones comparatively small and situated toward the middle of the sternum, scarcely visible from ventral view, arising from behind the membranous area and with two acute points apically (fig. 9a). Tergum with a V shaped excavation in the middle of the hind margin, two obtuse points sloping inwardly at apex of tergum (fig. 9b): the hind margin is developed into a broad strongly scleritized shelf-like area extending into the genital chamber, probably giving support to the anal area.

Length: body 4.5 mm.; wing, 5.2 mm.

Female.—The scape, pedicle and bases of first flagellar segments are yellow; the entire thorax is faintly yellowish tinged, the margins

and humeral ridges are distinctly yellow, as are the trochanters and fermora; otherwise like the male.

Length: body, 4.6 mm.; wing, 5.6 mm.

Holotype male, allotype female and two paratypes, one male and one female, Pico Turquino, Cuba, June 16-21, 1936, 6000 ft., (summit) (Darlington). One female is also on hand which appears to be this species from Whitfield Hall, Blue Mts., Jamaica, 4500 ft., Aug. 13-20, 1934 (Darlington), but as no male accompanies it the writer prefers not to set it up as a paratype.

Holotype, allotype and one paratype returned to the Cambridge Museum of Comparative Zoology, others retained in the Snow Entomological Collection.

Plecia punctulata n. sp.
(Figs. 10a, 10b)

Somewhat related to **nitidipes** Edwards but differing in a great many respects. The rostrum is developed as long or longer than the antennae; the dorsum is covered with minute punctules; the ninth sterum is not developed into two pairs of lobes on hind margin and the posterior lateral margins not at all produced; the tergum is not so deeply concave and the lateral margins are developed into a pair of narrow lobes posteriorly (fig. 10b).

Male.—In addition to the characters given above: Entirely black, opaque to sub-opaque, dorsum sometimes in part shining and usually appearing faintly pruinose, especially on the margins, this appearance is caused by the finely punctulate texture. Stems of halteres yellow-brown, knobs brown to black. Wings: yellow-brown fumose, veins and stigma brown; vein R_{2+3} gently curved into the costa; crossvein r-m situated at about the middle of the ditsance between m-cu and fork of media.

Genitalia: Ninth sternum scarcely developed on hind margin, only two small swellings toward the middle. Harpagones elongate and strong, produced about as long as the sternum and rather abruptly tapering on the inner margins near their apices (fig. 10a). Ninth tergum divided into two halves by a median groove or invaginated area; posterior lateral margins produced into a pair of narrow lobes; median margin with a strong pointed process (fig. 10b) which folds inward toward the genital chamber.

Length: body, 3.2-3.6 mm.; wing, 3.7-4 mm.

Female.—The stigma is concolorous with the wing membrane, vein R_{2+3} more oblique, curved but slightly near its base; antennae eleven segmented; humeral ridges and hind margins of mesonotum tinged with rufous; otherwise like the male, except for sexual characters.

Length: body, 4-4.3 mm.; wing, 4.6-5 mm.

Holotype male, allotype female and four paratypes (two males,

two females) Diamantina, Minas Geraes, Brazil, Nov. 14-18, 1919, (Cornell Univ. Exped.).

Holotype, allotype and two paratypes returned to Cornell University, two paratypes retained in Snow Entomological collection.

Plecia rufimarginata n. sp.
(Figs. 11a, 11b)

This species is near **edwardsi** n. sp., it can readily be separated by the rostrum being produced as long as the antennae and the difference in the male genitalia; the pleurae, sides and hind margin of the notum are tinged with reddish in the males and the legs of both sexes are tinged with yellowish brown. The hind legs are broken off the holotype so the shape of the posterior tarsi is not known, The fork of the media is located at about one-half the distance between the r-m crossvein and the fork of the Rs, instead of at the basal one-third as in **edwardsi**. This is the smallest species known to the writer from the New World.

Male Genitalia: Ninth sternum slightly wider than long, posterior margin concave with three median projections; the two lateral ones are heavily scleritized, vertical in position and densely haired; the median is more membranous and projects inward toward the genital chamber and is bare (fig. 11a). The harpagones are simple and terminate in an acute point on the inner margins. Ninth tergum with but a single concavity on posterior margin (fig. 11b).

Male length: body, 2.1-2.3 mm.; wings, 2.6 mm.

Female length: body, 2.6-2.7 mm.; wings, 3.2 mm.

Holotype male, Paraiso C. Z., Panama, Feb. 6, 1911 (E. A. Schwartz). Allotype female same data. Both returned to the United States National Museum.

Plecia rufiscutella n. sp.
(Figs. 12a, 12b)

This species approches **nitidipes** Edwards but is very different from that species. Both sexes can be easily recognized by the bright orange-red scutellum; the mouth parts are much longer and the wings differ; they are larger in size and the male genitalia is distinctive. In general appearance they seem near **impilosa** n. sp. but the genital structures place them nearer **nitidipes**.

Male.—Head: Rostrum produced longer than the head, antennae broken on holotype specimen. **Thorax:** Opaque black with a faint reddish tinge on the lateral margins; scutellum bright orange-red. Almost bare species, with only brown hairs on the upper portions of the sternopleurae and a dense patch of black hair on each humeri. Mesonotal furrows very faint, sides and hind portions of notum rugose; the rugosity appearing in sunken areas, one on each side and one just before the scutellum. Legs and abdomen subshining

black with black pile; halteres black. **Wings:** The wing venation is much the same as in **plagiata** Wiedemann but the fumose borders of the veins are more yellowish and not so dark. Vein R_{2+3} gently curves into the costa. R_1 is situated two-thirds the distance between subcosta and R_{2+3}; fork of media at or slightly beyond one-half the distance from the r-m crossvein to the fork of Rs.

Genitalia: Ninth sternum very broad and rather long, posterior lateral margins produced into two large flat-topped lobes, posterior median margin with two narrow pocesses. Harpagones very slender and elongate, vertical in position (fig. 12a). Ninth tergum concave on hind margin, posterior lateral margins with a distinct emargination, anterior margin very deeply cut inward almost dividing the segment (fig. 12b); cerci very broad and rounding.

Length: body, 7.5 mm.; wing, 9.5 mm.

Female.—Antennae eleven segmented, thorax brownish with a faint shade of red; scutellum yellow-orange; legs slightly reddish tinged, otherwise like the male.

Length: body, 8-9 mm.; wing 12 mm.

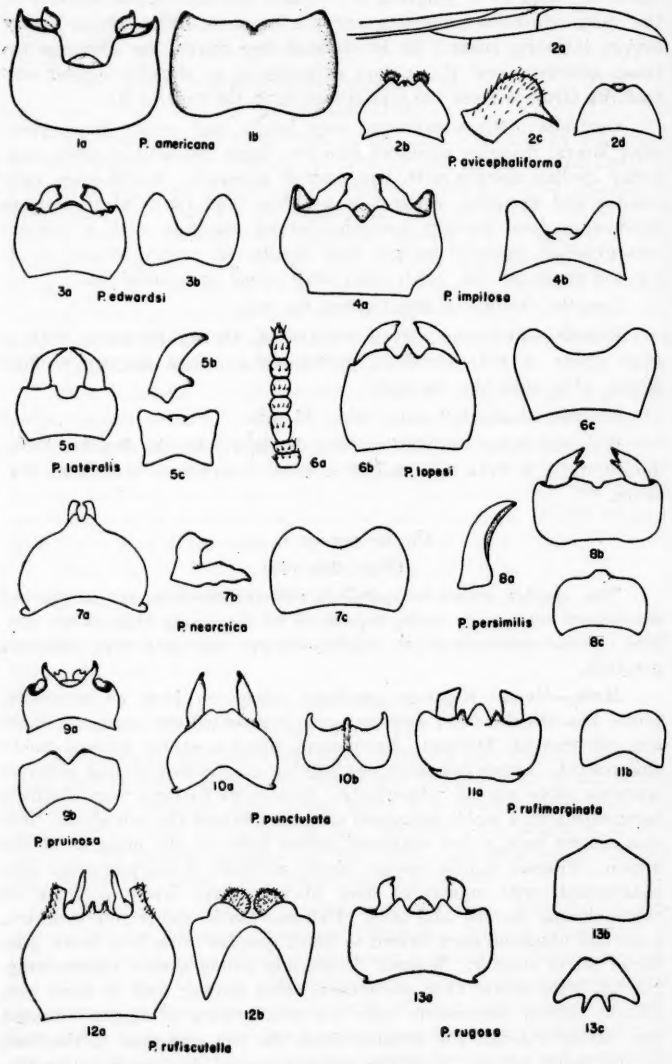
Holotype male and allotype female, Moyombamba Region, Peru, Jan. 8, 1926, f. 6144 (H. Bassler). Both returned to American Museum.

Plecia rugosa n. sp.

(Figs. 13a-13c)

This species seems to approach **rufimarginata** n. sp. in general characters but can be easily separated by the finely shagreened surface of the mesonotum, its slightly larger size and very different genitalia.

Male.—Head. Rostrum produced about as long as antennae, folded beneath the face; antennae nine segmented the segments short and compressed. **Thorax:** Mesonotum shining, entire surface finely shagreened, somewhat more coarsely so on the lateral and anterior margins, more smooth posteriorly. Mesonotal furrows very distinct, terminating in a small depressed area just before the scutellum. Dorsum almost bare, a few scattered yellow hairs on the margins of the notum. Pleurae chiefly opaque, upper portions of sternopleurae also shagreened, with numerous long brown hairs; lower portions of sternopleurae shining and bare. Halteres black, stems yellow-brown. Legs and abdomen dark brown to black covered with long black pile, tarsal joints slender. **Wings:** Uniformly yellow-brown fumose, stigma but little darker than membrane, veins brown; fork of third vein (R_{2+3}) curved moderately into the costa; fork of media situated just before one-half the distance from the r-m crossvein to the fork of the radial sector. Vein Cu_2 scarcely sloped downward at its tip, anal cell as wide at apex as at middle.


1a
P. americana
1b
2a
2b
2c
2d
P. avicephaliforma
3a
P. edwardsi
3b
4a
P. impilosa
4b
5a
P. lateralis
5b
5c
6a
6b
P. lopesi
6c
7a
7b
P. nearctica
7c
8a
P. persimilis
8b
8c
9a
9b
P. pruinosa
10a
10b
P. punctulata
11a
11b
P. rufimarginata
12a
12b
P. rufiscutella
13a
P. rugosa
13b
13c

Genitalia: Ninth sternum broader than long, posterior lateral margins not developed; hind margin with two moderately developed erections having a U shaped concavity between them; median portion developed into a somewhat membranous area which fits above the aedeagus. Harpagones with a somewhat beak-like point apically, on inner side (fig. 13a). Ninth tergum about as long as wide, narrowing somewhat on apical one-third, hind margin with a small indentation (fig. 13b); hind margin of tergum developed inwardly to form a broad plate before the anal region, as seen from lateral or end view; this plate terminates in two strongly scleritized, inward projecting points (fig. 13c).

Length: body, 3-3.3 mm.; wing, 3.5 mm.

Female.—Differs from the male in having the thorax entirely rufous and abdominal sterna lightly tinged with yellowish and first two antennal segments yellow.

Length: body, 4.5 mm.; wing, 4.6 mm.

Holotype male, allotype female and two paratype males, Bet. Queremal and Buenaventurs, alt. 3500-4000 ft. Columbia XII-11-1935 (Herbert F. Schwarz). Holotype, allotype and one paratype returned to American Museum, one paratype in Snow Entomological Collection.

EXPLANATION OF PLATE

Fig. 1. **Plecia americana** n. sp.
Male Genitalia: a. ventral, b. dorsal

Fig. 2. **Plecia avicephaliforma** n. sp.
a. Wing. Male Genitalia: b. ventral, c. lateral of harpagone, d. dorsal.

Fig. 3. **Plecia edwardsi** n. sp.
Male Genitalia: a. ventral, b. dorsal.

Fig. 4. **Plecia impilosa** n. sp.
Male Genitalia: a. ventral, b. dorsal.

Fig. 5. **Plecia lateralis** n. sp.
Male Genitalia: a. ventral, b. lateral of harpagone, c. dorsal.

Fig. 6. **Plecia lopesi** n. sp.
a. antenna. Male Genitalia: b. ventral, c. dorsal.

Fig. 7. **Plecia nearctica** n. sp.
Male Genitalia: a. ventral, b. lateral of harpagone, c. dorsal.

Fig. 8. **Plecia persimilis** n. sp.
Male Genitalia: a. lateral of harpagone, b. ventral, c. dorsal.

Fig. 9. **Plecia pruinosa** n. sp.
Male Genitalia: a. ventral, b. dorsal.

Fig. 10. **Plecia punctulata** n. sp.
Male Genitalia: a. ventral, b. dorsal.

Fig. 11. **Plecia rufimarginata** n. sp.
Male Genitalia: a. ventral, b. dorsal.

Fig. 12. **Plecia rufiscutella** n. sp.
Male Genitalia: a. ventral, b. dorsal.

Fig. 13. **Plecia rugosa** n. sp.
Male Genitalia: a. ventral, b. dorsal, c. end view of ninth tergum.

NEW RECORDS OF BUTTERFLIES FOR KANSAS (LEPIDOPTERA: RHOPALOCERA)

William D. Field, Lawrence, Kansas*

The following is a list of butterflies, all new records for Kansas, that because of their abundance, or for other reasons, are regarded by the writer as being native to the state.

Asterocampa clyton subpallida (Barnes & McDunnough). One female specimen of this subspecies of A. clyton has been taken in Douglas County, two have been taken in Leavenworth County and another was taken a number of years ago in Bourbon County.

Calycopis beon (Cramer). This species, recently recorded from a large number of Texas specimens as being new to the United States[1] has recently been taken in Sumner County, Kansas by Mr. D. Stallings and Dr. Turner.

Strymon ontario ontario (Edwards). Three specimens of this, all in good condition, have been taken in Greenwood and Douglas counties. The Douglas County specimen was taken on June 10th, 1934.

Strymon alcestis (Edwards). A freshly emerged male of this species was taken in June of 1938 and another specimen, a perfect, female, was taken in July of the same year.

Mitoura gryneus (Hübner). A half dozen specimens of this species were taken during July a great number of years ago by E. A. Popenoe in Riley County, Kansas.

Lycaena phlaeas hypophlaeus (Bdv.). This species has been taken in Scott, Pottawatomie and Douglas counties. In Douglas County about twelve specimens were captured on October 9th, 1932. Numerous other specimens were observed but were not taken as the species was thought to be very common. It has not been observed since.

Anthocharis midea (Hübner). Douglas and Leavenworth counties. This butterfly was observed for the first time during April of 1938. It is apparently rather abundant in these two counties and is undoubtedly found throughout eastern Kansas.

Achalarus lyciades (Geyer). Found for the first time several years ago in Leavenworth and Douglas counties during the latter part of May. It is apparently a common species, having been taken every season since the date of its first capture.

Erynnis persius (Scudder). Taken in Scott and Douglas counties.

Erynnis lucilius (Scudder & Burgess). Several specimens of this species have been taken during September in Douglas County.

Erynnis baptisiae (Forbes). A female of this species was taken

*Contributed from the Department of Entomology, University of Kansas.

[1]In manuscript.

in July, 1932 in Douglas County. A male was taken in Leavenworth County on June 14, 1936. It will probably be found to be more common than these records indicate, but it has only just recently been described[1] and has not been searched for along the western edge of its range. The specimens of this species and of both of the above were determined by Dr. W. T. M. Forbes, the latest reviser of the group.

Polites manataaqua (Scudder). This species has been taken in Riley, Montgomery and Douglas counties. It is rather abundant in in the last two counties but is not as abundant as the closely related **Polites themistocles** (Latreille).

Catia otho egeremet (Scudder). Rather common in Douglas County and is undoubtedly found throughout most of eastern Kansas.

Poanes zabulon (Bdv. & LeC.). This species has been taken in Greenwood, Douglas and Pottawatomie counties and is rather common during the latter part of May and the first week in June in Douglas County.

Atrytone ruricola (Boisduval). Douglas and Pottawatomie counties. It is rather common in Douglas County and will probably be found to occur over most of eastern Kansas.

[1]Psyche, 43, p. 111, 1936.

SOME UNUSUAL BUTTERFLY RECORDS FOR KANSAS (LEPIDOPTERA: RHOPALOCERA)

William D. Field, Lawrence, Kansas*

The following is a list of butterflies, all new records for Kansas, that because of their rarity or because of circumstances preceeding their capture should be regarded as wind blown specimens or strays that are far out of their normal range.[1] All are typically western, southern or southwestern species.

Heterochroa bredowii bredowii (Geyer). A single female, in excellent condition was found fluttering around Boxelder (**Acer negundo** L.) on May 2nd, 1936 by V. F. Calkins near Scott City, Kansas. This species is normally found from Arizona south through Mexico to Guatemala.

Asterocampa celtis alicia (Edwards). This species which ranges from Texas through the Gulf States to Florida, has been taken as a stray in Crawford County.

Melitaea fulvia (Edwards). A single specimen of this typically southwestern species was taken on June 28, 1912 in Rush County by F. X. Williams.

Everes comyntas herrii (Grinnell). Stray specimens of this western subspecies of **Everes comyntas** (Godt.) have been taken in Scott County by V. F. Calkins.

Glaucopsyche lygdamus oro (Scudder). One specimen of this species was taken by R. Christy in Scott County during the spring of the year. **Oro** is found typically in the Rocky Mountains of Colorado.

Appias ilaire poeyi Butler. A male and female of this species were taken on August 2nd and August 3rd of the past year in Greenwood County by Mr. Edward Todd.

Pyrgus communis albescens Plotz. This southwestern subspecies of **Pyrgus communis** (Grote) has been taken in Scott County by V. F. Calkins.

Yvretta rhesus (Edwards). This species which inhabits parts of Arizona, New Mexico and Colorado, has been taken in Scott County, where it is very rare.

Hesperia viridis (Edwards). Two male specimens of this western species have been taken in Scott County State Park by R. Christy.

Hesperia attalus (Edwards). A single male specimen of this species has been taken by Dr. R. H. Beamer in Montgomery County.

*Contributed from the Department of Entomology, University of Kansas.

[1]For additional records of wind blown specimens or strays see: V. F. Calkins, "Some Unusual Butterfly Records Taken In Scott County Kansas." Bull. Brook. Ent. Soc., vol. XXXI, no. 2, pp. 66-68, April, 1936.

It is typically an eastern and southern species.

Atrytone logan lagus (Edwards). A single specimen of this species has been taken in the Scott County State Park. It is native to parts of Texas, Colorado and Wyoming.

Calpodes ethlius (Cramer). This species is found from Argentina and Brazil in South America north through Central America, Mexico and the West Indies into Florida and Texas. It occasionally strays further northward in the United States and sometimes is taken as far north as St. Louis, Missouri and Long Island, New York. A single specimen was taken in Douglas County, Kansas on May 9th, 1911 by F. X. Williams.

Libythea bachmanii larvata (Strecker). A single wind-blown female of this species was taken in Greenwood County by Edward Todd on August 3rd, 1939.

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CONTENTS OF THIS NUMBER

Observations on Stenoma Mistrella Busck (Stenomidae, Lepidoptera), H. D. Oliver Miller ---- 1
Notice of Annual Meeting, H. H. Walkden, Secretary-Treasurer 3
Notes on Texas Phyllophaga with Description of One New Species (Coleoptera, Scarabaeidae), H. J. Reinhard ---- 4
Telenomus Ovivorus (Ashmead), an Egg-parasite of the False Chinch Bug, F. M. Wadley ---- 6
Distribution Notes on Amblyscirtes Nysa Edwards. (Lepidoptera: Hesperiidae), William D. Field ---- 7
New Corixidate from China, Manchuria and Formosa, H. B. Hungerford ---- 8
A New Phyllophaga (Scarabaeidae:Coleoptera) from Jamaica, Milton W. Sanderson ---- 14
Studies in New World Plecia (Bibionidae-Diptera), Part I, D. Elmo Hardy ---- 15
New Records of Butterflies for Kansas (Lepidoptera: Rhopalocera), William D. Field ---- 28
Some Unusual Butterfly Records for Kansas (Lepidoptera: Rhopalocera), William D. Field ---- 30

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